

Serial No.: 10/728,405
Amendment

Attorney Docket No. 004017.0006

Remarks

In paragraph one of the Official Action, the Examiner raised an objection to the Information Disclosure Statement, relating specifically to Russian Reference Patent No. 649,789. It is noted that the submission was accompanied by an Abstract Translation of the reference in the English language, explaining the subject matter presented by the Russian Patent. The Disclosure related to an expanding elastic sleeve fitted over a rigid tube. The tube and sleeve are inserted into soil, according to Applicant's understanding, to compress concrete filling around the elastic sleeve. Applicant respectfully requests that the Examiner consider and review the reference. Attached as Exhibit A is a copy of the Abstract in English.

In paragraphs 2-5, objections were made to the text and, in particular, to various numbers missing from the specification (40, 78) and duplication of numbering (52, 53, 56, 59, 68). Objection was also made with respect to claims 28-50 as directed to features missing from the drawing. Applicant respectfully traverses that objection, noting that item 68 comprises a rod associated with a transaxial plate as explained in paragraph 63 of the specification.

The claims have all been replaced with new claims, thus obviating the objections in paragraph 6 of the Official Action.

The text of paragraph 55 of the specification has been corrected, as suggested by the Examiner in paragraph 7 of the Official Action.

The remaining paragraphs of the Official Action relate to objections pursuant to 35 U.S.C. §§ 102 and 103, based on the prior art. Those objections are traversed hereinafter. Specifically, the Examiner relied upon three principal references; namely Ogawa Patent No. 3,772,892, Pao Chen Patent No. 3,869,869 and Visconti Patent No. 5,152,639 to reject the claims. Further references such as Lancaster U.S. Patent No. 1,477,567 were relied upon in combinations with the principal references cited. With respect to the following remarks, it is believed that the rejection, based on the

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combination of Ogawa and Lancaster, is the most relevant rejection to which Applicant must direct attention.

Briefly, the invention as set forth in claims 60, 61 and 77, the independent claims, is directed to the following concepts. An apparatus for construction of a soil reinforcement pier in a soil matrix includes an elongate, hollow tube. The tube is comprised of a lower, bulbous end having a diameter or cross sectional shape that is greater than at the upper end of the tube. The lower end is configured so as to provide axial and transaxial forces in the soil matrix, as it is lowered into the soil. The lower end of the elongate tube is open for discharge of aggregate material, such as a cementous material. The open end is configured, as stated above, to provide forces which compress the soil matrix as the tube is lowered into the ground. The open end is also fitted with either a sacrificial cap or a mechanism which enables opening and closing of the open end, depending upon whether it is moving upwardly and thus necessarily open to discharge aggregate material or moving downwardly in order to compress the soil matrix and material within the pathway of the movement of the elongate tube.

Among the features which differentiate the construction from the prior art is the fact that the elongate tube includes a unitary, shaped bottom head element, which has a bulbous, lower end. Being unitary enables improved control of the pier forming operation. This is to be contrasted with the Lancaster reference, Patent No. 1,477,567, wherein the lower end of a tube can possibly be described as having a larger external cross section. However, the tube in Lancaster is not integral, or unitary, as claimed. It is a combination of a sliding tube which fits over and slides on the outside face of an elongate tube. This is a distinctive difference in construction, inasmuch as a sliding outside tube requires sliding parts that can fail due to the movement of the parts. Thus, the utility of the Lancaster device, especially in highly dense soils, may result in failure. The construction of the present invention obviates such an outcome.

Claim 60 of the application is thus directed to the unitary hollow tube with the bottom head element having a larger diameter cross section in combination with a sacrificial cap. Claim 61 is directed to these concepts wherein the combination

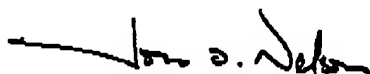
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contemplates a control mechanism which opens and closes the open discharge end of the hollow tube. Independent claim 77 is substantially generic to the subject matter of claims 60 and 61, and includes limitations directed to the bulbous head construction of the unitary elongate tube, which is constructed so as to provide soil matrix stress components, both axially and transaxially, in order to compact the adjacent soil matrix and thereby provide for a soil reinforcement pier construction.

In view of the foregoing amendments and remarks, it is believed that the newly submitted claims and the specification in the amended condition are allowable. Reconsideration thereof and passage to allowance is earnestly solicited.

Respectfully Submitted,



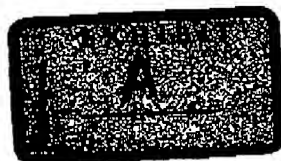
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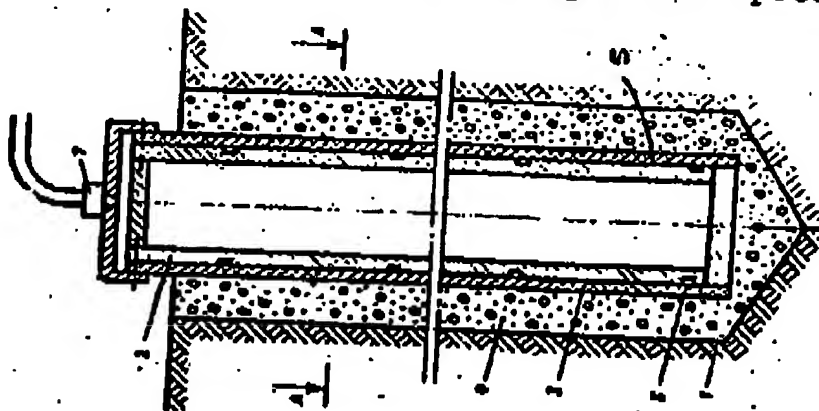
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BGOS = ★ Q42 K9458B/47 ★ SU-649-789
 Pile shell casting method - using tube with expanding elastic sleeve
 which is blown out to compact mix and deflated for withdrawal
 BELO GOSSTROI CONS (GOME =) 24.10.77-SU-536143
 (08.05.79) E02d-03/02 E02d-05/38

The erection of the piles involves sinking a tube with an elastic sleeve which is filled with gas under pressure for



concreting and deflated before extracting the shell in order to increase its load bearing capacity.

A sleeved tube (2) is sunk in the prepared hole (1). The space between the tube and the elastic sleeve (3) is filled with the concrete mix (4). Compressed gas or water at a pressure of 1-2 atm. is fed (7) into the gaps between the sleeve and the tube, formed by the vertical and circular channels (5,6). The gas pressure compacts the mix. The tube and the sleeve remain in the hole until the concrete shell is hard then the gas is evacuated allowing the shell to contract around the tube which is then easily withdrawn. Matsevich I.I. Ponomarev V.F. Maizels R.G., Bul. 8/28.2.79. 24.10.77 as 536143 (3pp121)